REMARKS/ARGUMENTS

Claims 1, 4-9, 11, 16-18, and 21-36 are pending.

Claims 1, 4-9, 16-18, and 21-32 have been amended.

Claims 2-3, 10, 12-15, and 19-20 have been cancelled.

Claims 33-36 have been added.

Support for the amendments is found in the claims and specification, as originally filed. Specifically, support for the limitation "wherein the activated carbon material can adsorb a gasoline vapor and desorb the absorbed gasoline vapor" of claims 1, 21, 24, 27, and 30 can be found at page 2, page5, last paragraph to page 6, first paragraph; page 32. Support for the limitation "an element" of claims 1, 4-9, 16-18, and 21-32 can be found in original claims 9-11. Support for the limitation "a honeycomb-shaped activated carbon paper" of claims 1, 4-9, 16-18, and 21-32 can be found in original claims 2-3. Support for the limitation "inserting the honeycomb-shaped activated carbon paper into a canister or an engine air intake element" of claims 21, 24, 27, and 30 can be found in original claim 10, figure 4, pages 9-10 and 19. Support for claims 33-36 can be found at pages 1-2 and 5-9, figures 4-5, and claim 9 and 11.

No new matter is believed to have been added.

Claims 1-6, 8, 11-13, 27-28, and 30-31 are rejected under 35 U.S.C. 102(b) or 103(c) over Susumu et al., JP 2001-240407. The rejection is traversed because Susumu et al. do not describe

(1) an element comprising a honeycomb-shaped activated carbon paper and inserting the paper into a canister or an engine air intake element,

(2) activated carbon satisfying b/a = 0.3 through 0.55,

(3) the activated carbon adsorbing gasoline vapor and thereafter desorbing the absorbed gasoline vapor, and

(4) a method for preventing a release of a fuel evaporation emission from a fuel tank system.

The present specification describes that the claimed honeycomb-shaped activated carbon paper reduces the leak amount of fuel vapor, provides a low pressure drop (increase in the pressure drop results in lengthening the fuel feeding period) and excellent moldability and strength (pages 1-2, 5-8). To achieve these characteristics, the activated carbon has to possess an excellent adsorption and desorption property (pages 2, 5-6, 7), which is achieved by using the claimed activation method providing the ratio of b/a from 0.3 to 0.55, and a honeycomb-shaped activated carbon paper. Carbon can be activated, for example, in gas atmosphere (e.g., steam, carbon dioxide, oxygen) (see page 15 and the Examples).

Susumu et al. describe an activated carbon capable of efficiently adsorbing small molecular weight materials such as hydrogen and nitrogen and a method of carbon activation (see page 1 of the automated English translation, Field of Invention). The described method provides for a uniform small pore diameter of the activated carbon for adsorbing the small molecular matter efficiently (see page 1, Problems to be Solved; and [0007]-[0008], [0012]-[0013], [0017]). The surface area of the activated carbon is 500-3000 m2/g (see [0007], [0017], Table 1) and the adsorption quantity of nitrogen is 10 ml/g or more at 25 °C and 1 atm (see [0007], [0017], Table 1).

The Susumu method comprises activating carbon at 600-1200 °C under an atmosphere that contains carbon dioxide and carbon monoxide (see abstract and [0008]-[0009], [0012]-[0013], [0019], Table 1, the Examples). The result of using carbon monoxide, in addition to carbon dioxide, is forming an activated carbon having a small pore diameter so as to efficiently adsorb small molecular weight materials such as nitrogen gas.

Susumu et al. do not disclose that the described activated carbon can adsorb and thereafter desorb gasoline vapor which is an important factor in preventing a fuel evaporation

emission (*see* the present specification pages 1-9). It is impossible to adopt the Susumu activated carbon for an element for a fuel evaporation emission preventing device because it is inferior in the adsorption and disorption of gasoline vapor which is important in preventing a fuel evaporation emission.

Moreover, Susumu et al. do not describe an element comprising a honeycomb-shaped activated carbon paper obtained from an activated carbon satisfying b/a = 0.3 through 0.55. The Susumu activated carbon does not inherently possess the claimed b/a ratio because it is produced by a different method (i.e., with carbon monoxide), has a small pore diameter and is inferior in the adsorption and disorption of gasoline vapor.

The legal requirement for inherency is that the Susumu et al activated carbon product necessarily has the b/a ratio of 0.3-055. Applicants have endeavored to perform further experimentations to show that the Susumu et al activated carbon product does not posses the claimed b/a ratio. This experimentation is described in the Declaration under 37 CFR 1.132 of Kenichi Ishikawa, who is one of the inventors, a copy of which is attached hereto.

As Susumu et al do not describe an activation time, the inventors used an experimental analogous of Examples 1, 4, 8, and 14 and Comparative Examples 1, 3, 8, and 15 with regard to a reference to the specific area and the absorption quantity of N_2 described by Susumu et al.

The results obtained are shown in Table 1 (see the attachment to this paper).

As shown in Table 1, the Susumu et al activated carbon product does not inherently possess the claimed b/a ratio. Examples 1, 2, 5, and 7 in the Declaration show that if carbon is activated in the atmosphere of carbon dioxide and carbon monoxide, the ratio b/a is much larger than that claimed. Examples 3, 4, 6, and 8 in the Declaration show that when carbon is activated by steam or steam and carbon monoxide, the ratio b/a is smaller but is still outside of the claimed range.

Further, Susumu et al. does not describe a method for preventing a release of a fuel evaporation emission from a fuel tank system, and in particular, from a parked vehicle (see claims 33-36 and the present specification pages 5-6).

Also, the Examiner is of the opinion that the Susumu activated carbon can be used for adsorption and filtration in fuel systems for automobile engines. However, the present invention does not provide such an absorbent or filter, but provides an element for a fuel evaporation emission preventing device. The claimed element is neither a filter nor merely adsorbent of small materials, but is adsorbent and disorbent of gasoline vapor.

Susumu et al. do not describe the wet/dry molding and inserting a honeycomb-shaped activated carbon paper into a canister for producing an element for a fuel evaporation emission preventing device.

This specification discloses that even if the same compounds are used for producing the molding, the resultant moldings have different properties because a method of carbon activation is particularly impotent. Specifically, as illustrated in Table 1 on page 29, the same compounds and the same amount of the compounds is used in Example 1 and Comparative Example 5. However carbon activation time in Example 1 is 12 hours and 6 hours in Comparative Example 5. Table 1 shows that the b/a ratio in Example 1 is 0.395 and the molding is suitable for its intended use, while the b/a ratio in Comparative Example 5 is 0.614 (outside of the claimed range) and the molding is unsuitable. Likewise, carbon compounds in Example 2 and Comparative Example 6 are the same and are used in the same proportion. The activation of carbon in Example 2 is conducted for 10 hours, while in Comparative Example 6 it is 18 hours. The results in Table 2 show that the b/a ratio in Example 2 is 0.358, while the ratio in Comparative Example 6 is 0.288 (outside of the claimed ratio). As a result, the molding of Comparative Example 6 is unsuitable in an evaporation emission preventing device.

The specification also shows that parameters of a corrugated honeycomb molding is important for the performance of the molding, as illustrated in Examples 5-7 and Comparative Example 7-8. In Comparative Example 7, the amount of 3GX activated carbon is reduced compared to Examples 5-7. As a result, the activated carbon of Comparative Example 7 is defective. Also, in Comparative Example 8, a commercially available ceramic honeycomb activated carbon formed by *extrusion* molding and bound in parallel by an adhesive does not satisfy the drop test and is defective. In contrast, the claimed molding is formed by a *dry or wet* molding method (pages 14-15).

Thus, a method of activation of carbon and a method of forming the carbon molding defines properties of the molding.

Also, one would not have modified the Susumu et al activated carbon product so that activated carbon adsorbs and desorbs gasoline vapor, to achieve the claimed ration b/a, and to use a honeycomb-shaped activated carbon paper because Susumu et al concern forming an activated carbon having a small pore diameter so as to efficiently adsorb small molecular weight materials such as nitrogen gas, which is achieved by activating carbon under an atmosphere that contains carbon dioxide and carbon monoxide. The present invention concerns reducing the leak amount of fuel vapor and providing a low pressure drop (increase in the pressure drop results in lengthening the fuel feeding period) and excellent moldability and strength.

Thus, Susumu et al. neither anticipate nor make obvious the claimed element and method for preventing a fuel evaporation emission. Applicants request that the rejection be withdrawn.

Claims 7, 14-20, 29, and 32 are rejected under 35 U.S.C. 103(c) over Susumu et al., JP 2001-240407, and Brownhill et al., US 4,289,513. The rejection is traversed because the

combination of the references does not describe the claimed element comprising a honeycomb-shaped activated carbon paper obtained by molding of the activated carbon satisfying b/a = 0.3 through 0.55 and adsorbing and desorbing gasoline vapor and a method for preventing a fuel evaporation emission.

The disclosure of Susumu et al. is discussed above. Brownhill et al. do not cure the deficiency.

Brownhill et al. describe a molding obtained by molding a mixture of an activated carbon, a binder, and a fibrous paper base material (*see* claim 1) and a product comprising sheets and fibers made from cellulose, latex binder material, and a particular activated carbon (*see* col. 7-8). The activated carbon of Brownhill et al. is used for sorption and filtering in fuel systems, i.e., is merely used for trapping the fume from the fuel systems (see col.7, lines 20-25; col. 9, line 30 to col. 10, line 68). The activated carbon and molding of Brownhill et al. have no relation to the claimed fuel evaporation emission device. Brownhill et al. do not describe that his activated carbon can adsorb and desorb gasoline vapor when preventing the release of the fuel evaporation emission.

The present specification describes that the claimed honeycomb-shaped activated carbon paper reduces the leak amount of fuel vapor, provides a low pressure drop (increase in the pressure drop results in lengthening the fuel feeding period) and excellent moldability and strength (pages 1-2, 5-8). To achieve these characteristics, the activated carbon has to possess an excellent adsorption and desorption property (pages 2, 5-6, 7), which is achieved by using the claimed activation method providing the ratio of b/a from 0.3 to 0.55.

The specification describes various fuel evaporation emission preventing devices (pages 1-9). However, they do not provide excellent reduction of the leak amount of fuel vapor, do not low the pressure drop, and do not have excellent moldability and strength (pages 8-9, bridging paragraph).

The specification discloses that even if the same compounds are used for producing the molding, the resultant moldings have different properties because a method of carbon activation is particularly impotent (see the Examples and Comparative Examples).

The specification also shows that parameters of a corrugated honeycomb molding is important for the performance of the molding, as illustrated in Examples 5-7 and Comparative Example 7-8. As in Comparative Example 8, a commercially available ceramic honeycomb activated carbon formed by *extrusion* molding and bound in parallel by an adhesive does not satisfy the drop test and is defective. In contrast, the claimed molding is formed by a *dry or wet* molding method (pages 14-15).

Thus, the activated carbon of Brownhill et al. does not inherently possess the claimed characterisitics.

Moreover, the claimed element uses an honeycomb-shaped activated carbon paper satisfying the p-ZEV regulatory requirements (*see* page 5, line 16, to page6, line 11). According to the p-ZEV, the vehicles must meet the stringent ZEV emission requirements (see page 5, lines 16-20, and the attached PZEV Emission Technology sheets). To meet the ZEV requirements, the inventors found that it is necessary for the activated carbon to satisfy b/a = 0.3-0.55. To satisfy the claimed ratio, activation conditions have to be tightly controlled (*see* the Examples in the present specification). For example, if coconut shells are used as a carbonaceous material, the activated carbon obtained by a short-time steam activation shows good adsorption capacity, but does not satisfy the claimed ratio, and, therefore. Also, the activated carbon obtained by a long-time steam activation shows good desorption capacity, but does not satisfy the claimed ratio. Consequently, both activated carbons do not satisfy the ZEV requirements (*see* the Examples in the present specification).

PZEV was adopted in 1998 as part of LEV II (*see* the attached PZEV Emission Technology sheets). Brownhill et al. did not recognize the ZEV requirements because it was

not adopted at the time of filing (March 27, 1978) and developing the activated carbon satisfying the ZEV stringent requirements was not necessary.

For the reasons stated above, Susumu et al. and Brownhill et al. do not make the claimed invention obvious. Applicants request that the rejection be withdrawn.

The rejection of claim 9 under 35 U.S.C. 103(a) over Susumu et al., JP 2001-240407, and Kosaka et al., US, 5,118,329, is unsustainable because the combination of the references does not describe or suggest an element comprising two canisters connected consecutively, wherein one canister comprises the claimed honeycomb-shaped activated carbon paper and another canister comprises granular activated carbon.

The disclosure of Susumu et al. is discussed above. Kosaka et al. do not cure the deficiency.

Kosaka et al. disclose a chemically activated shaped carbon. Although Kosaka et al. disclose a two canister system illustrated at fig. 1, Kosaka et al. do not disclose that a first canister comprises granular activated carbon and a second canister comprises the claimed honeycomb-shaped activated carbon paper, wherein the canisters connected consecutively.

The claimed canister arrangement satisfies the required ZEV emission values even when a vehicle is parked (page 5-6 of the specification). The Kasaka canisters are connected in parallel, do not comprise different activated carbon, and perform well for the intended purpose, i.e., to recover of hydrophobic organic compounds (col. 2, lines 19-23).

PZEV was adopted in 1998 as part of LEV II (*see* the attached PZEV Emission Technology sheets). Kosaka et al. did not recognize the ZEV requirements because it was not adopted at the time of filing (May 14, 1991) and developing the activated carbon satisfying the ZEV stringent requirements was not necessary.

Applicants request that the rejection be withdrawn.

A Notice of Allowance for all pending claims is requested.

Respectfully submitted,

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